REMARKS

Claims 1-35 were pending. Claims 1, 2, 6, 13-15, and 22-23 have been amended. The amendment to claim 13 is supported by at least the Description at page 100, paragraph 3. Accordingly, claims 1-35 remain pending subsequent entry of the present amendment.

Drawings

Applicant has provided a replacement sheet for Figure 50, as discussed above, to correct a reference numeral typographical error. No new matter has been added.

Description

Applicant has amended a number of paragraphs of the Description to correct reference numeral typographical errors. No new matter has been added.

35 U.S.C. § 112 Rejections

Claims 1-35 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant has amend claims 1 and 23 for clarification purposes. Each of claims 13, 14, and 23 has been amended to correct for lack of antecedent basis. Accordingly, Applicant believes claims 1-35 meet the requirements of 35 U.S.C. § 112.

35 U.S.C. § 102 Rejections

In the present Office Action, claims 1-11, 14, and 16-33 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,483,804 (hereinafter "Muller"). In addition, claims 12-13, 15, and 34-35 stand rejected under 3 U.S.C. § 103(a) as being unpatentable over Muller, in view of U.S. Patent No. 6,438,135 (hereinafter "Tzeng"). Applicant respectfully traverses the above rejections and requests reconsideration.

In the present Office Action, it is suggested that Muller discloses all of the features of claim 1. However, Applicant disagrees. As noted above, claim 1 has been amended for clarification purposes and recites a system which includes:

"logic configured to:
    determine control status of all of the contexts;
    determine if a context is idle or not;
    select a context; and
    release the selected context;
    wherein in response to determining that none of the plurality of contexts are
        owned by an entity responsible for packet processing and that at least one
        of the contexts is idle, the logic is configured to trigger immediate
        selection and release of one of the at least one idle contexts to the entity
        responsible for packet processing."

A rejection for anticipation under section 35 U.S.C. §102 requires that each and every limitation of the claimed invention be disclosed in a single prior art reference. Applicant submits there a number of features which are neither disclosed nor suggested by the cited art. Muller discloses and is generally directed to a system for improving processor utilization. To that end, Muller discloses an approach whereby related packets in a communication system may be identified so that they may be processed in a collective manner within the protocol stack. In contrast, the presently claimed invention is generally directed to a system and method for reducing latencies in servicing interrupts.

Included among the features of claim 1 are the recited features "wherein in response to determining that none of the plurality of contexts are owned by an entity responsible for packet processing and that at least one of the contexts is idle, the logic is configured to trigger immediate selection and release of one of the at least one idle contexts to the entity responsible for packet processing." At least these feature are absent from the references. First, Muller nowhere discloses "determining that none of the plurality of contexts are owned by an entity responsible for packet processing." On page 4 of the Office Action, various portions of Muller are cited as disclosing these features. For example, columns 57-58 of Muller are cited. However, the cited disclosure of Muller merely describes that when a buffer is released to a host computer, the released buffer is identified by its location within a free buffer array. Muller also describes the distinction between (i) a buffer identifier and (ii) an entry in a free buffer array where the buffer identifier is stored. None of the cited portions of Muller disclose the features of determining that none of the plurality of contexts are owned by an entity responsible for packet processing. For at least this reason, claim 1 is patentably distinct from the cited art.

In addition to the above, the features of claim 1 wherein the logic "is configured to trigger immediate selection and release of one of the at least one idle contexts to the entity responsible for packet processing" - in response to determining that none of the plurality of contexts are owned by an entity responsible for packet processing and that at least one of the contexts is idle - are nowhere disclosed or suggested. With respect to these features, columns 55-56 of Muller are cited. In particular, the following disclosure of Muller is cited:

> "In one alternative embodiment of the invention, instead of using a separate data structure to identify a buffer for storing a packet, a buffer may be identified within DMA engine 120 by the index of the free descriptor within the free descriptor ring that referenced the buffer. One drawback to this scheme when the ring contains a limited number of descriptors, however, is that a particular buffer's descriptor may need to be re-used before its buffer has been released to the host

> computer. Thus, either a method of avoiding or skipping the re-use of such a descriptor must be implemented or the buffer referenced by the descriptor must be released before the descriptor is needed again. Or, in another alternative, a free descriptor ring may be of such a large size that a lengthy or even virtually infinite period of time may pass from the time a free descriptor is first used until it needs to be re-used." (Muller, col. 55, line 66 – col. 56, line 13).

It is first noted that the above reproduced disclosure says nothing regarding the recited "determining". Further, the triggered immediate selection and release of an idle context is nowhere disclosed. Rather, Muller simply states that a descriptor may need to be re-used before its buffer is released. Accordingly, Muller provides the general suggestions of avoiding or skipping re-use of the descriptor, making sure the descriptor is released before needed again, or using a very large descriptor ring to avoid such a scenario. Applicant submits the features for which the above portion of Muller is cited are not disclosed therein. Therefore, claim 1 is patentably distinguishable for these additional reasons as well. As claim 14 includes features similar to that of claim 1, claim 14 is similarly believed patentable.

Claim 23 also recites features neither disclosed nor suggested by the cited art. For example, claim 23 recites a method which includes "receiving, at the processor, notification of a selected context about to be released and a memory marker pointing to an instruction thread in memory." It is suggested that Muller discloses these features in the following:

> "Program 2300 begins with a WAIT instruction (e.g., instruction zero) that waits for a new packet (e.g., indicated by operator NP) and, when one is received, sets a parsing pointer to the twelfth byte of the layer two header. This offset to the twelfth byte is indicated by the success offset portion of the instruction. Until a packet is received, the WAIT instruction loops on itself. In addition, a CLR_REG operation is conducted, but the operation enabler setting indicates that it is only conducted when the comparison succeeds (e.g., when a new packet is received)." (Muller, col. 28, lines 58-68).

Applicant submits the above does not disclose "receiving, at the processor, notification of a selected context about to be released." Rather, this disclosure of Muller merely describes a program which begins with a WAIT instruction. Further, the disclosure makes clear that "[u]ntil a packet is received, the WAIT instruction loops on itself." Therefore, there is no notification as recited in the claim, and there is no disclosure or suggestion regarding a "selected context about to be released." For at least these reasons, claim 23 is distinguished from the cited art. In addition, the recited executing the instruction thread "in the released context" is not disclosed. Col. 29, lines 44-53 are Muller are cited as disclosing these features. However, Applicant disagrees. The cited disclosure merely states that either instruction 2 or instruction 3 will be executed following instruction 1 – which is not equivalent to the recited features. Still further, Applicant notes that features (d) and (e) of claim 23 are not addressed in the rejection on page 6.

In view of the above discussion, Applicant submits each of the independent claims 1, 14, and 23 are patentably distinct from the cited art. Therefore, all pending claims are believed in condition for allowance for at least the above reasons. In addition, the dependent claims recite additional features which are not disclosed or suggested by the cited art. Selected examples are provided in the following.

Claim 2 recites the additional features wherein "the logic system, upon determination that none of the contexts are owned by the entity responsible for packet processing and that there are no idle contexts, aborts pre-loading of a given context of the contexts to render the given context idle." It is suggested in the Office Action that Muller discloses these features at column 67, lines 14-29. However, the cited disclosure merely describes the maintenance of a cache of descriptors. For example, Muller discloses:

> "As described above, in one embodiment of the invention free ring manager 1012 maintains a cache of descriptors referencing empty buffers. Thus, a descriptor may be retrieved from this cache and its buffer allocated to header buffer table 1006. If the cache is empty, new

descriptors may be retrieved from a free descriptor ring in host
memory to replenish the cache."

As can be seen from the above, Muller does not disclose any features regarding
the recited aborting of "pre-loading of a given context of the contexts to render the given
context idle."

Also, claim 13 recites additional features which are not disclosed by the cited art.
Claim 13 stands rejected under 35 U.S.C. § 103(a) over Muller in view of Tzeng. In
particular, it is suggested that the additional features cited in claim 13 are disclosed by
Tzeng. In the cited portions of Tzeng, various priority queues, and round robin techniques
are described. As amended, claim 13 recites the features "wherein the priority scheme
comprises a prediction as to which of a plurality of idle contexts is likely to have access
to needed functional units." These features of claim 13 are believed readily distinguished
from the schemes described by Tzeng.

Information Disclosure Statement

Applicant notes that certain previously submitted information disclosure
statements do not appear to have been considered. For example, a 1449 form including as
the first reference "Quattromani et al." which was submitted on April 7, 2004, does not
appear to have been considered. Also, the 1449 form including as the first reference
"Zaun" which was submitted on April 13, 2004, does not appear to have been considered.
For the examiner's convenience, a complete copy of each of the previously submitted
information disclosure statements is included herein. Applicant requests the examiner
sign and return the above mentioned forms.

In view of the above discussion, Applicant believes the application to be in
condition for allowance.

CONCLUSION

      Applicant submits the application is in condition for allowance, and an early notice to that effect is requested.

☒ Replacement Sheet (Fig. 50 / 1 sheet)
☒ Copy of Information Disclosure Statements previously submitted to USPTO
☒ Petition for Extension of Time

Respectfully submitted,

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Date: 4/24/06